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Notice of Allowability	Application No.	Applicant(s)	
	10/032,318	BASOL, BULENT M.	
	Examiner	Art Unit	
	Thomas H Parsons	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the Amendment filed 12 January 2004.
2. ☒ The allowed claim(s) is/are 1 and 3-44.
3. ☒ The drawings filed on 05 August 2002 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
 - * Certified copies not received: _____.
5. ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
 - (a) ☐ The translation of the foreign language provisional application has been received.
6. ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE**

7. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
8. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No. _____.
 - (b) ☐ including changes required by the proposed drawing correction filed _____, which has been approved by the Examiner.
 - (c) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No. _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the margin according to 37 CFR 1.121(d).

9. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|---|
| 1 <input type="checkbox"/> Notice of References Cited (PTO-892) | 5 <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2 <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6 <input type="checkbox"/> Interview Summary (PTO-413), Paper No. _____ |
| 3 <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No. _____ | 7 <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4 <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit of Biological Material | 8 <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9 <input type="checkbox"/> Other _____ |

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Response to Amendment

This is in response to the Amendment filed 12 January 2004.

DETAILED ACTION

Specification

1. The objection to the disclosure because of minor informalities has been **withdrawn** in view of Applicant's Amendment.

Claim Objections

2. The objection to claim 38 because of minor informalities has been **withdrawn** in view of Applicant's Amendment.

Claim Rejections - 35 USC § 112

3. The rejection of claim 30 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention has been **withdrawn** in view of Applicant's Amendment.

Claim Rejections - 35 USC § 103

4. The rejection of claims 1-3 and 22-23 under 35 U.S.C. 103(a) as being unpatentable over Uzoh (6,056,869) has been **withdrawn** in view of Applicant's Amendment.

Uzoh discloses a method of removing a conductive material from a bevel edge of a conductive layer of a workpiece (wafer) using a metal etchant and a shaped cathode in contact with the metal etchant comprising the steps of: holding the frontside of the wafer; placing a shaped cathode such that the shaped cathode at least partially covers the backside and side edge of the semiconductor wafer in the vicinity of at least a portion of the backside and side edges of the semiconductor wafer; rendering the wafer anodic with respect to the shaped cathode during the deplating operation; rotating the wafer or shaped cathode with respect to one another during the deplating step; supplying current to the anode and cathode for a time sufficient to substantially completely deplate metal deposited on the side edges and backside of the semiconductor wafer; and directing a continuous stream of metal etchant into a space between the workpiece and the shaped cathode.

In contrast, the claimed invention is directed toward holding the backside of a workpiece and removing conductive material from a bevel edge including a front edge which is neither taught nor suggest by Uzoh.

5. The rejection of claims 24-29 under 35 U.S.C. 103(a) as being unpatentable over Uzoh as applied to claim 22 above, and further in view of Volodarsky et al. (6,352,623) has been

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withdrawn in view of Applicant's statement of common ownership on page 13 of the Amendment.

6. The rejection of Claims 30-36 under 35 U.S.C. 103(a) as being unpatentable over Uzoh as applied to claim 22 above, and further in view of Basol et al. (6,610,190) has been **withdrawn** in view of Applicant's statement of common ownership on page 13 of the Amendment.

Claim Rejections - 35 USC § 102

7. The rejection of claims 38-40 under 35 U.S.C. 102(e) as being anticipated by Hongo et al. (6,615,854) has been **withdrawn** in view of Applicant's Amendment.

Hongo et al. disclose a method of performing edge bevel removal on a workpiece and cleaning of a front face of a workpiece using a solution comprising the steps of: holding the backside of a wafer in a workpiece carrier; rotating the workpiece; directing a continuous stream of a first solution to an edge of a conductive layer of the workpiece while rotating and chemically etching the workpiece to remove conductive material from the edge; and directing a spray of a second solution to a front face of the conductive layer of the workpiece while rotating the workpiece to clean the front face of the workpiece.

In contrast, the claimed invention comprises electrochemically etching and cleaning using the same solution which is neither taught nor suggested by Hongo et al.

8. The rejection of claims 38-39 under 35 U.S.C. 102(a) as being anticipated by Mayer et al. (6,309,981) has been **withdrawn** in view of Applicant's Amendment.

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Mayer et al. disclose a method of performing edge bevel removal on a workpiece and cleaning of a front face of a workpiece using a solution comprising the steps of: holding the backside of a wafer in a workpiece carrier; rotating the workpiece; directing a continuous stream of a first solution to a bevel edge of a conductive layer of the workpiece while rotating and chemically etching the workpiece to remove conductive material from the bevel edge; and directing a spray of a second solution to a front face of the conductive layer of the workpiece while rotating the workpiece to clean the front face of the workpiece .

In contrast, the claimed invention comprises electrochemically etching and cleaning using the same solution which is neither taught nor suggested by Mayer et al.

Reasons for Allowance

The following is an examiner's statement of reasons for allowance:

A search of the prior art record failed to reveal or explicitly teach, alone or in combination, what is instantly claimed: in particular,

A method of removing a conductive material from a bevel edge of a conductive layer of a workpiece, including a front edge surface of the conductive layer, using an etching solution and an etching electrode in contact with the etching solution comprising the steps of: holding a backside of the workpiece using a workpiece carrier; rotating the workpiece; directing a continuous stream of the etching solution to the bevel edge of the workpiece, including the front edge surface of the conductive layer, while rotating the workpiece; and applying a potential difference between the electrode and the conductive layer of the workpiece while step of direction. For this reason, and for reasons as stated above in paragraphs 4-8 above, **claim 1 and**

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claims 3-21, which are dependent thereon, are patentably distinct from the prior art of record.

An apparatus for performing an edge bevel removal process on a front conductive surface edge of a conductive material on a workpiece comprising: a chamber; a moveable and rotatable workpiece holder that holds a backside of the workpiece and rotates the workpiece; at least one edge conductor material removal device for supplying a continuous stream of an etching solution toward at least the front conductive surface edge of the workpiece; a first electrode configured to be electrically coupled to the continuous stream; a second electrode configured to be electrically coupled to the conductive material; and a power source configured to apply a potential difference between the first electrode and the second electrode. For this reason, and for reasons as stated above in paragraphs 4-8 above, **claim 22 and claims 23-37, which are dependent thereon, are patentably distinct from the prior art of record.**

A method of performing edge bevel removal on a workpiece and cleaning of a front face of a workpiece using a solution comprising the steps of: holding a backside of the workpiece in a workpiece carrier; rotating the workpiece; directing a continuous stream of the solution to a bevel edge of a conductive layer of the workpiece while rotating the workpiece to remove conductive material from the bevel edge at a first rate; and directing a spray of the solution obtained from the source to a front face of the conductive layer of the workpiece while rotating the workpiece to clean the front face of the workpiece. For this reason, and for reasons

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as stated above in paragraphs 4-8 above, **claim 38 and claims 39-44, which are dependent thereon, are patentably distinct from the prior art of record.**

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas H Parsons whose telephone number is (571) 272-1290. The examiner can normally be reached on M-F from 7:00 to 4:30 (First Friday Off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan, can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Thomas H Parsons
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